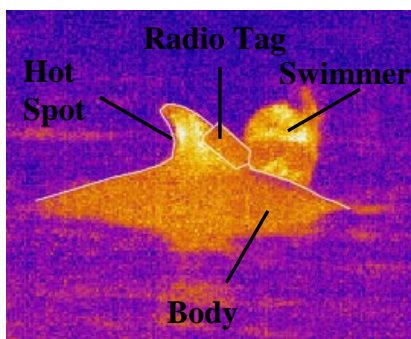


Web Weekly 5

Another week has gone by, and the weather has not been the most cooperative, but we have still been able to make sets and continue our sampling. At the end of last week, we had just captured and released our focal dolphin 'Rocky' for the second time. The following day, seas turned rough again, and we were forced to track Rocky round-the-clock (still in the trough...) for the next three days, until conditions improved. The morning of September 3, the seas finally calmed down again, and we quickly prepared to capture Rocky a third and final time. Our objective was to obtain one more blood sample and then remove her tag and let her go. We made our set and captured a nice school of about 100 spotted dolphins, but Rocky was not among them. She got away -- again! Last week it took us two attempts to recapture her, and today it would take us three tries to get her in the net again. But by early afternoon, we had successfully captured Rocky and two other dolphins. We successfully sampled her, and then removed her tag and released the three together.

In addition to the blood sampling and tagging, we have been recording other general health information on all dolphins handled. Among other things, we measure length and girth for each animal, establish gender, and – for females – check for pregnancy using a portable ultrasound unit. We also obtain a body temperature, which allows us to monitor the dolphin's condition. For other, non-handled dolphins, we obtain temperature information using a special infrared camera. Infrared thermal "pictures" allow us to measure the surface body temperatures of dolphins in a non-invasive way, to determine whether the dolphins are experiencing elevated body temperatures as a result of being chased and captured during purse seine operations. Hyperthermia, or an increased body temperature, can have a number of negative physiological impacts, including impaired reproductive functions and stress to developing fetuses. To date we have taken over 300 thermal images of spotted and spinner dolphins contained within the net corral. These thermal images can be analyzed using a computer program to determine the dolphin's skin surface temperature.



For example, the thermal image at the left shows a spotted dolphin carrying a radio tag on its dorsal fin (the animal and radio tag are outlined in white), with a swimmer directly behind the animal. In this image the lighter colored areas represent areas of warmer temperature. The hot spot on the trailing edge of the dorsal fin is 0.6-0.8°C warmer than the rest of the fin and approximately 1°C warmer than the lateral body of the animal. The appendages of dolphins, their flukes, pectoral flippers and dorsal fin, function as thermal windows, allowing the animal to dissipate excess

body heat. Thus, overall the dorsal fin is warmer than the body surface, and the hot spot may represent an area where underlying blood vessels carrying warm blood are causing a local increase in skin surface temperature.

The thermal image at the right shows the back of the head of a spotted dolphin “spy-hopping” from the water. In this image, lighter areas again represent areas of warmer temperature. Notice that the blowhole, outlined in a black circle, is warmer (0.2-0.3°C) than the remainder of the head. The blowhole, which is open in this image, is warmer because we are looking into the uninsulated interior of the head.

The thermal images collected during this project will be compared with images collected from wild and captive dolphins, to determine whether dolphins chased and captured in the ETP tuna fishery are experiencing relatively elevated body surface temperatures.

Once again, stay tuned for more next week!

